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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/771,074	02/03/2004	Joel F. Zuhars	137782 (MHM - 15221US01)	1973

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EXAMINER	
BITAR, NANCY	

ART UNIT	PAPER NUMBER
2624	

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12/21/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/771,074	ZUHARS ET AL.	
	Examiner	Art Unit	
	Nancy Bitar	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 December 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 5-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 5-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *02 March 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *See Continuation Sheet*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's response mailed 12/14/2007 has been entered and made of record.

2. Applicant has amended claims 1, 3, 10, 14, and 18. Claims 1-3, 5-20 are currently pending.

Applicant argues that Strobel does not teach scrolling through a set of images to create an animation. Rather, as discussed above, Strobel teaches the display of a three-dimensional volume reconstructed from two or more registered two-dimensional images, and claims 1 and 10 have been amended to recite the creation of an "animation by scrolling" through a set of images. Applicant argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (automatically displayed in an image by image manner at an acceptable rate of speed.) are not recited in the rejected claims. Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993)

In response, Strobel teaches the presentation of the picture element at a monitor that defines the position as well the orientation (step VI, figure 1) but does not exactly teach the animation of images by scrolling which can be done on the display. Nevertheless, Examiner has added Filler et al (2001/0051881) reference in order to be more accurate. Filler teaches a live medical record is figure 15 a composite screen 1500 that includes a navigational view that contains a navigation links 1110 provided as is a

scroll bar 1506, wherein by selections through clicking or even just by passing a cursor over the particular selectable link can make regions light up or can drive the floating box, trigger animation, cause new windows to open showing additional data, or any other dynamic or static HTML action. Note that the patient imaging of Filler includes motion fluoroscopy. Therefore, the animation process of filler would be obvious to be used on the display of Strobel In order to make user interfaces more usable, the user can rely on an explicit overview of the whole system with better visualization skills. Moreover, it is true that Filler teaches the images are loaded by the use of HTML and available to an individual who is viewing the pages through their web browser but Filler also teaches that an AUTOMATED SOFTWARE program might be keyed to be used

3. All remaining arguments are reliant on the aforementioned and addressed arguments and thus are considered to be wholly addressed herein.

Claim Rejections - 35 USC § 112

4. Claims 1-3; 5-20 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 1 and 10 teaches automatically displaying each image in said collected plurality of images in an image by image manner at an acceptable rate of speed. The closest description the examiner finds "This

algorithm may use various parameters such as the current direction of travel through the image sequence, the desired scrolling speed and scrolling resolution".

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1-3,5-20 are rejected under 35 U.S.C. 103(a) as being anticipated by Strobel et al (US 7050844) in view of Filler et al (2001/0051881).

As to claim 1, Strobel et al. teaches a method of performing instrument tracking on an image (recognize the position of the instrument, column 2, lines 29-31) comprising:

collecting a plurality of images; computing at least one of a position and orientation of at least one instrument for said plurality of images (step V; coordinates of the two projection images that describe the position of the picture element in the image, figure 1, column 6, lines 3-11);

and automatically displaying each image in said collected plurality of images in an image by image manner at an acceptable rate of speed to create an animation by scrolling through said plurality of images wherein said at least one position and orientation of said at least one instrument is projected on each said image (step VI; figure 1; presentation of the picture element at a monitor that defines the position as well the orientation).

While Strobel meets a number of the limitations of the claimed invention, as pointed out more fully above, Strobel does not specifically teach creating an animation by scrolling through the images automatically. Specifically, Filler et al. teaches the use of teaches a live medical record in figure 15 a composite screen 1500 that includes a navigational view that contains a navigation links 1110 provided as is a scroll bar 1506, wherein by selections through clicking or even just by passing a cursor over the particular selectable link can make regions light up or can drive the floating box, trigger animation, cause new windows to open showing additional data, or any other dynamic or static HTML action or by using an automated software thus . Note that the patient imaging of Filler includes motion fluoroscopy. It would have been obvious to one of ordinary skill in the art to use the animation by scrolling through the images in order help to make user interfaces more usable in Strobel presentation display in order the user can rely on an explicit overview of the whole system thus understanding and providing a better visualization skills and positional information. Therefore, the claimed invention would have been obvious to one of ordinary skill in the art at the time of the invention by applicant.

As to claim 2, Strobel et al. teaches the method of claim 1 wherein said plurality of images comprise a plurality of 2D fluoroscopic images (note that the radiation detectors 6, 7 are fashioned as x-ray image intensifiers or as flat image detectors, column 6, lines 34-38).

As to claim 3, Strobel et al. teaches the method of claim 2 comprising continuously presenting the image by image animation using a display (The reconstruction volume, i.e. the vessel tree 12, as well as the position of the catheter tip with the coordinates (x.sub.K, y.sub.K, z.sub.K), are then displayed at the monitor 9. The display is based on the common coordinate system (x, y, z). On the basis of this display, the physician can recognize the exact spatial position of the catheter tip in the three-dimensionally presented vessel tree 12, column 7, lines 39-45).

As to claim 5, Strobel et al. teaches the method of claim 1 comprising calibrating at least one image of said collected plurality of images such that said at least one position and orientation of said at least one image may be accurately displayed (FIG. 1 shows the executive sequence of the inventive method as a flow chart. In Step I, a calibration of the two C-arm systems with respect to a common coordinate system ensues first, with the two C-arm systems being moved into different positions around a calibration phantom, and the position-related projection matrices being acquired, column 5, lines 49-55).

As to claim 6, Strobel et al. teaches the method of claim 5 comprising selecting at least one calibrated image to be a current image (On the basis of these two-dimensional projection images, the spatial coordinates of a selected picture element of these two images, namely of the tip of the catheter shown in the images, are determined in Step V, column 6, lines 3-21).

As to claim 7, Strobel et al. teaches the method of claim 6 comprising computing said at least one position and orientation for said at least one instrument for said current

image (The determination of the coordinates and the actual image determination and output also is controlled with the image registration and calculating unit 8, column 6, lines 44-47).

As to claim 8, Strobel et al. teaches the method of claim 1 comprising collecting said plurality of images using at least one moveable collection device (the C-arm is moved into two different angular positions for registering the projection images with the image planes residing differently relative to one another. In this embodiment of the invention, thus, only one C-arm is present with which the angiography projection images are registered first, column 3, lines 45-61, note that the physician is presented with the continuously occurring displacement motion of the instrument position).

As to claim 9, Strobel et al. teaches the method of claim 8 wherein said moveable collection device comprises a C-arm coupled to an imaging device (C-arm system, column 4, lines 32-34).

The limitation of claim 10 has been addressed above except for the following "performing instrument tracking on a series of 2 D images and repeating said selecting, computing and projecting and displaying steps to create an animation by scrolling through said series of 2D images". Strobel teaches that limitation in (column 6, lines 39-47; a number of two-dimensional angiography projection images are thereby registered)

As to claim 11, Strobel et al. teaches the method of claim 10 comprising collecting said series of 2D images using a collection device that moves (the C-arm is moved into two different angular positions for registering the projection images with the image planes residing differently relative to one another. In this embodiment of the

invention, thus, only one C-arm is present with which the angiography projection images are registered first, column 3, lines 45-61, note that the physician is presented with the continuously occurring displacement motion of the instrument position).

As to claim 12, Strobel et al. teaches the method of claim 11, wherein said collection device comprises a C-arm coupled to the imaging device (C-arm system, column 4, lines 32-34).

As to claim 13, Strobel et al. teaches the method of claim 10 wherein said series of 2D images comprise a series of 2D fluoroscopic images (note that the radiation detectors 6, 7 are fashioned as x-ray image intensifiers or as flat image detectors, column 6, lines 34-38).

As to claim 14, Strobel et al. teaches the method of claim 10 comprising continually scrolling through said series of 2D images in a display (FIG. 1 shows the executive sequence of the inventive method as a flow chart. In Step I, a calibration of the two C-arm systems with respect to a common coordinate system ensues first, with the two C-arm systems being moved into different positions around a calibration phantom, and the position-related projection matrices being acquired, column 5, lines 49-55).

As to claim 15, Strobel et al. teaches the method of claim 14 comprising projecting said at least one position and orientation of said at least one instrument into at least one image of said series of 2D images (spatial coordinates of a selected point of the instrument shown in the projection images are identified in a common coordinate

system for the angiography projection images and the projection images, column 2, lines 40-51).

As to claims 16-17, Strobel et al. teaches the method of incrementing at least said current image and recomputing said at least one position and orientation of said at least one instrument (In order to then determine the x, y and z-coordinates of the catheter tip in the coordinate system (x, y, z) of the reconstruction volume, i.e. of the vessel tree 12, the known projection matrices describing the positions of the two C-arm systems 2, 3, as well as the image coordinates (u.sub.6, v.sub.6) and (u.sub.7, v.sub.7), are determined. The spatial coordinates (x.sub.K, y.sub.K, z.sub.K) describing the spatial position then can be calculated by matrix calculation, column 7, lines 30-38).

Claims 18-20 differs from claim 1 only in that claim 1 is a method claim whereas; claim 18 is an apparatus claim. Thus, claims 18-20 are analyzed as previously discussed with respect to claim 1above.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nancy Bitar whose telephone number is 571-270-1041. The examiner can normally be reached on Mon-Fri (7:30a.m. to 5:00pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on 571-272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Nancy Bitar

12/17/2007

ANDREW W. JOHNS
PRIMARY EXAMINER

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :06/19/2007, 12/142007,05/23/2005.